ANNUAL REPORT (FISCAL YEAR 2005) AND WORKPLAN (FISCAL YEAR 2006) FOR INVENTORIES AND VITAL SIGNS MONITORING

SOUTHERN PLAINS INVENTORY AND MONITORING NETWORK

Includes: Alibates Flint Quarries National Monument, Bent's Old Fort National Historic Site, Capulin Volcano National Monument, Chickasaw National Recreation Area, Fort Union National Monument, Fort Larned National Historic Site, Lake Meredith National Recreation Area, Lyndon B. Johnson National Historical Park, Pecos National Historical Park, Sand Creek Massacre National Historic Site, and Washita Battlefield National Historic Site.

Southern Plains Network Approval Signatures

10/12/05

Dennis Ditmanson, Superintendent, Pecos National Historical Park, 2005 Chair, Board of Directors — Date

10/17/05

Karren Brown, Superintendent, Lake Meredith National Recreation Area / Alibates Flint Quarries National Monument
2006 Chair, Board of Directors — Date

10/26/05

Bruce Bingham, Regional Inventory and Monitoring Coordinator — Date

10/31/05

Dustin Perkins, Southern Plains Network Coordinator — Date

AARWP Checklist

	Budget program (MS Access, aarwp_budget.mdb)
X	The income amounts entered for Biological Inventories, Vital Signs Monitoring, Prototype $$ - Annual Transfer, Water Quality Monitoring and other sources matches the dollar amounts from the memos sent to the regions/networks by WASO (have you used the correct income amounts?).
X	In the Add/Edit Budget Records form, the amount shown for Total Expenses matches that for Total Income. (If it doesn't, enter a record under Expenses in the 7_Other category to make it balance; use an entry such as 'Unexpended funds' or 'Overspent Funds' in the Description column to explain the amount.)
X	For all Expense records, the Description field includes the name of the university, agency, company, or other vendor to help us document our outsourcing efforts. (If this expense involved a contract, cooperative agreement, interagency agreement, or other partnership, is it clear where the money went?)
X	For all Expense records, the correct item from the picklist for 'Where $$ Went' has been entered. [Think about who the check was written to; e.g., enter 'Other Non-Federal' for funding that went directly to the private sector, such as for purchases (computers, supplies, etc.), travel (airlines, rental cars, hotels).]
X	On the Status of Biological Inventories form, there is one record for each inventory that is described in the text section of the AARWP or in the budget program. Be sure to list each park that was involved in the particular inventory.
X	Each year's budget has been exported as an .rtf file (one for FY 2005 and one for FY 2006), and both files have been inserted into MS Word at the end of the AARWP document.
X	The file aarwp_budget.mdb has been renamed to include the 4-character network alpha code and the years, as shown in this example: NCCN_FY0506_aarwp.mdb
	Annual Report and Work Plan (MS Word)
X	I have carefully read the guidance for the AARWP and followed it.
X	A header or footer with the date that the aarwp was last revised has been included.
X	I gave special attention to the 'Summary of Major Accomplishments' and 'Public Interest Highlights' sections of the report, following this years' guidance and example. (We need good examples of the successes, applications, and highlights of the program to help us obtain funding for all 32 networks! Your 'Summary of Major Accomplishments' section at the beginning of your annual report is what we'll use for the I&M Program's annual Report to Congress to justify the funding spent by your network.)
X	In the 'Status of Park Vital Signs Monitoring' table, all entries are equal to or greater than the entries in last year's report.
X	Photographs that might be included in one of the reports to Congress, brochures, websites, or other materials that help the program have been submitted by the network. (See the photo database and guidelines for submitting photographs.)
X	The aarwp file has been renamed using the network's 4-character alpha code and the years (FY0506) as in the example NCCN_ FY0506_aarwp.doc
X	The annual report has been approved by the appropriate individuals, per my region's procedures. (If you cannot get electronic signatures, it is okay to submit a hard copy with signatures after November 4.)
X	I have followed my region's procedures for submitting the two files (e.g., NCCN_ FY0506_aarwp.doc and NCCN_ FY0506_aarwp.mdb). (Most regions require you to submit the files through the regional office. The files may be zipped into a zip file if desired, and then submitted to Steven Fancy via either email or ftp).
	Review of FY 2006 Work Plan by WASO
NO	[Enter Yes or No]: Has the FY 2006 workplan been approved by the network Board of Directors, and therefore ready for the full WASO review? (If you enter No, the WASO I&M and WRD offices will only briefly review the work plan for 'red flags'.

Southern Plains Inventory and Monitoring Network
Summary of Major Accomplishments and Public Interest Highlights

Southern Plains Network

This network of 11 parks includes Alibates Flint Quarries National Monument, Bent's Old Fort National Historic Site, Capulin Volcano National Monument, Chickasaw National Recreation Area, Fort Larned National Historic Site, Fort Union National Monument, Lake Meredith National Recreation Area, Lyndon B. Johnson National Historical Park, Pecos National Historical Park, Sand Creek Massacre National Historic Site, and Washita Battlefield National Historic Site. The network spans the states of Colorado, Kansas, New Mexico, Oklahoma and Texas and has parks in the Intermountain and Midwest Regions.

The Southern Plains Network made significant progress in biological inventories, vital signs development, and water quality. Several inventory projects were completed and initiated in Fiscal Year (FY) 2005. The network developed conceptual models for grassland, riverine, reservoir, riparian, palustrine marsh, landscape vulnerability and piñon-juniper systems. A list of potential vital signs was derived from the conceptual models, scoping sessions with park staff, and conceptual model workshops. A water resources report was completed that describes relevant federal and state legislation, summaries of water resources at each park and a list of impaired water bodies. NPSpecies certification was completed for vertebrates at all 10 of the original network parks and plant certification was completed at 7 of the 10 original network parks.

Biological Inventories

Network Objectives for Biological Inventories

- Locate and catalog existing park natural resource documents, data sets, and spatial information and ensure that information is readily available.
- Continue conducting inventories to reach the Servicewide goal of documentation for 90% of the vertebrate animal and vascular plant species within the network parks.
- Continue to evaluate status and identify data gaps within the core set of natural resource inventories for network parks, and conduct investigations of these gaps and species of special concern to network parks.

Plant Inventory at Lake Meredith National Recreation Area and Alibates Flint Quarries National Monument – The Nature Conservancy and the Botanical Research Institute of Texas documented 459 plant species at these adjacent parks. The report recommended three management practices be implemented. First, they recommended that off-road vehicle use be discontinued in the Rosita Creek and Blue Creek areas due to the physical and biological damage inflicted by off-road vehicles. Second, that controlled burns be increased. Third, that efforts be made to eradicate two exotic species, Russian olive (*Elaeagnus angustifolia*) and Siberian elm (*Ulmus pumila*). Additionally, this plant inventory found four species new to the state of Texas: Plains spring parsley (*Cymopterus*

acaulis), slickseed fussy bean (*Epilobium leptophyllum*), salt marsh goosegrass (*Puccinella fasciulata*) and *Atriplex patula*. In addition, they documented six species that were new to the panhandle region.

Plant Inventory at Washita Battlefield National Historic Site – The Oklahoma Biological survey documented 272 species at Washita Battlefield National Historic Site in a final report that was completed in FY 2005. Five species that are tracked by the Oklahoma Natural Heritage Inventory were detected: low silverbush (*Argythamnia humilis*), plains beeblossom (*Gaura brachycarpa*), cutleaf nightshade (*Solanum triflorum*), giant dropseed (*Sporobolus giganteus*), and prairie zinnina (*Zinnia grandiflora*). They recommended that two exotic species, Johnson grass (*Sorghum halpense*) and salt cedar (*Tamarix ramosissimina*) be monitored.

Wetland Inventory at Bent's Old Fort National Historic Site – The Bureau of Reclamation initiated an inventory of the plants and fish at the Arch Wetland and the Arkansas River. The Arch Wetland is one of the most important natural resources at Bent's Old Fort and will likely be included as a vital sign. The Bureau of Reclamation conducted field work in FY 2005 and a final report will be complete in FY 2006. The inventory identified eight new fish species and at least nine plant species new to the park. Five additional plant species may be added to the park list after final identification. The invasion of cattail (*Typha latifolia*) and the exotic Canada thistle (*Cirsium arvense*) into the Arch wetland were identified as severe problems that could restrict plant diversity and bulrush habitat.

Deep Water Fish Inventory at Lyndon B. Johnson National Historical Park – The Lower Colorado River Authority used electro-fishing to conduct a deep-water fish inventory in the Pedernales River. This area was cited as needing additional work after the initial vertebrate inventories were completed. The survey added four new species to the park list.

Plant Inventory at Lyndon B. Johnson National Historical Park – A supplemental plant inventory was completed by the Botanical Research Institute of Texas (BRIT). The initial plant inventory was conducted in 2002 after a long drought. BRIT recommended conducting a supplemental inventory during a year with more typical rainfall. This spring had average or slightly above average rainfall and BRIT was already in the park collecting data for vegetation mapping. This supplemental inventory documented 51 new plant species for a total of 609 plant species at Lyndon B. Johnson National Historical Park. The survey found two unusually large Eve's necklace (*Sophora affinis*) trees that may qualify them for champion status. The plant work documented two new state records, Antilles cudweed (*Gamochaeta antillana*) and smooth Parisian bedstraw (*Galium pariesiense* var. *leiocarpum*). However, both of these species are exotic and their invasiveness in Texas is currently not known.

Bird Inventory at Sand Creek Massacre National Historic Site – Rocky Mountain Bird Observatory conducted bird surveys during the 2005 breeding season. This was the first ever inventory for birds at this park. The inventory has documented the state listed

burrowing owl (*Athene cunicularia*), ferruginous hawk (*Buteo regalis*), and mountain plover (*Charadrius montanus*) as present at the park. A final report is due in FY 2006.

Plant Inventory at Sand Creek Massacre National Historic Site – A plant inventory was initiated by Colorado State University. This is the first formal plant inventory of the park. The rare prairie gentian (Eustoma russellianum) has been detected. Field work was conducted in FY 2005 and will continue in FY 2006, with a final report due in early FY 2007.

NPSpecies Certification at SOPN Parks – The Southern Plains Network completed vertebrate certification for all of the original ten network parks and plant certification for seven of the original ten parks. Plant certification for the final three parks should be complete early in FY 2006. The eleventh park, Sand Creek Massacre National Historic Site is a new park and currently does not have any vertebrate of vascular plant data to certify.

Vegetation Mapping Inventories at Capulin Volcano National Monument, Chickasaw National Recreation Area, Fort Larned National Historic Site, Fort Union National Monument, Lyndon B. Johnson National Historical Park, Pecos National Historical Park, Sand Creek Massacre National Historic Site, and Washita Battlefield National Historic Site – Vegetation maps were initiated at nine Southern Plains Network Parks in FY 2005. The work consists largely of plot data collection and preliminary classification of vegetation types. Work will continue in FY 2006 with continuation of classification, vegetation mapping, and ground-truthing. Depending on the park, vegetation maps will be complete in Fiscal Years 2006 and 2007.

Vital Signs Monitoring

Network Objectives for Vital Signs Monitoring

- Hire and retain professional staff and secure office space and facilities that provide a safe, healthy, and productive environment.
- Develop and maintain working and decision-making processes that engages technical staff and managers of network parks.
- Implement and maintain an integrated GIS and data management program.
- Summarize and analyze existing information and concepts important for assessing current and future monitoring efforts and needs in the network parks.
- Identify and prioritize all aquatic indicators (including climatic and atmospheric), including the water quality component of the monitoring plan, and develop protocols and implement programs to monitor the Vital Signs.
- Identify and prioritize all terrestrial indicators (including climatic and atmospheric indicators), and develop protocols implement programs to monitor Vital Signs.
- Develop and maintain strategies to share information with network parks, scientists, and others interested in the network's I&M program.

Phase I Report Complete
The Southern Plains Network completed the first major step of implementing a long-term monitoring program by completing the Phase I Report in FY 2005. Chapter One is a comprehensive review of the legislation, policy, and guidance relevant to the Inventory and Monitoring Program, the goals for the program, a review of the major network ecosystems, a description of the process that the network went through to identify potential vital signs, a preliminary list of monitoring objectives, and a summary of existing monitoring within and in the vicinity of network parks. Chapter Two provides descriptions on the background and importance of conceptual models, the major types of models, and the models that were developed for the major ecosystems in the Southern Plains Network. Appendices with reference information such as natural resource summaries for each park, lists of exotic plants and animals and listed species, GPRA goals pertinent to the Southern Plains Network, network and park maps, a water resources report, an air quality report, scoping summaries from each park, list of GIS datasets, ecosystem workshop reports, prioritized ranking of network natural resources and stressors, and complete descriptions of the conceptual models were also completed.

Terrestrial Conceptual Models Developed
The Southern Plains Network completed several terrestrial conceptual models this year. These conceptual models are crucial to understanding the ecosystems, communicating information between scientists and park managers, and in identifying potential vital signs. Dan Tinker and Ann Hild at the University of Wyoming developed grassland conceptual models. These included an overview pictorial diagram of the major grassland natural resources and stressors in the network and submodels that examined fire and grazing, soil and microbial processes and prairie dogs. Lastly, they developed a driver-stressor model to help depict the linkages between drivers, stressors, ecological attributes and vital signs.

Todd Swannack at Texas A+M University developed landscape vulnerability models. These models started by identifying the major processes that affect landscape pattern. Residential, agricultural, industrial, and management were the major anthropogenic processes around Southern Plains Network Parks. By examining these processes, two additional submodels were developed to show the effects of a change in natural disturbance regime and habitat modification. The change in natural disturbance regime examined grazing, fire, climate, and catastrophic events. Grazing and fire submodels were developed that looked at these effects on a landscape scale. Habitat modification changes ecosystem function, species distribution, and habitat characteristics. Fragmentation was further examined as a submodel of habitat modification. Fragmentation occurs through a number of different pathways with the result being the higher probability of extinction of many native species.

Karie Cherwin of the University of Colorado developed a piñon-juniper model that focused on Capulin Volcano National Monument and Pecos National Historical Park, the two network parks with this ecosystem. The model focused on the balance between grasslands and woody species encroachment, which is the principle concern of this ecosystem at these two parks. The model considers the effects of grazing on fire on the gradient from grassland to shrubland to piñon-juniper woodland. A driver-stressor model

was also developed to help depict the linkages between drivers, stressors, ecological attributes and vital signs.

Potential Terrestrial Vital Signs Identified
The Southern Plains Network identified potential terrestrial vital signs through scoping sessions with park staff and reviewing park and peer-reviewed literature. A list of 74 potential grassland vital signs was reviewed at a grassland ecosystem workshop that was attended by 12 outside experts and staff from each network park. The outside experts represented a broad range of people from academia, and federal and state governments. From this workshop 14 vital signs were preliminarily designated as high priority. The network also held an aquatic and landscape workshop (see below for details on the aquatic systems) that reviewed 17 potential landscape vital signs, identifying 7 as high priority.

Water Quality
Aquatic Conceptual Models Developed
The Southern Plains Network completed several aquatic conceptual models this year. These conceptual models are crucial to understanding the ecosystems, communicating information between scientists and park managers, and in identifying potential vital signs. Sue Braumiller, a National Park Service Intermountain Regional Hydrologist developed aquatic models for riverine, lacustrine (reservoirs), and riparian ecosystems. For each of these ecosystems, models were developed that consisted of driver-stressor models that depict the linkages between drivers, stressors, ecological attributes and vital signs, characterization models that show the relationships between biotic and abiotic factors and tables that identify stresses, effects, and potential indicators. A palustrine freshwater marsh model was developed by network staff. This model emphasized the drying and re-flooding hydrologic cycle typical of marshes in the Great Plains and had a driver-stressor model to aid in identification of potential vital signs.

Water Resources Report Completed
Southern Plains Network staff completed a network water resources report this year. This report reviews federal legislation such as the Clean Water Act and the Safe Drinking Act, as well as pertinent legislation from the five states in the network: Colorado, Kansas, New Mexico, Oklahoma, and Texas. A section identifies the miles of perennial and intermittent rivers, miles of canal, acres of lakes or reservoirs, and miles of lake or reservoir shoreline within each park and as a total for the network. Also listed are impaired water bodies within the network and the report states that there are no outstanding natural waters within the network. Summaries of the water resources at each park that include sections on background, primary water resources, management and scientific issues, and past and present monitoring.

Potential Aquatic Vital Signs Identified
The Southern Plains Network identified potential aquatic vital signs through scoping sessions with park staff and reviewing park and peer-reviewed literature. A list of 33 potential aquatic vital signs was reviewed at an Aquatic and Landscape ecosystem workshop that was attended by 17 outside experts and staff from each network park. The

outside experts represented a broad range of people from academia, and federal and state governments. From this workshop 13 vital signs were preliminarily designated as high priority.

I. Overview and Objectives

The Southern Plains Inventory and Monitoring Network (SOPN) includes eleven national parks with significant natural resources in five states, including: Colorado, Kansas, New Mexico, Oklahoma, and Texas. Ten of these parks have been in the network since its inception. An eleventh park, Sand Creek Massacre NHS (SAND), (for complete list of park abbreviations see Table 1) is a recent addition to the National Park Service (NPS) and SOPN. SOPN has not yet been allocated inventory or vital signs monitoring funds for SAND.

The budget for SOPN had some unforeseen budget changes during the past year that are worth mentioning here. SOPN was originally in the National Park Service (NPS) Budget to receive our full funding amount of $389,000 for Fiscal Year (FY) 2005. We used this amount for our discussions of the draft work plan at our annual meeting in August 2004 and for our draft FY 2005 Workplan that was submitted in October 2004. Congress then approved a NPS budget that only included an increase of $3.6 million to the Natural Resource Challenge, as opposed to the $4.6 million requested. Despite this lower amount, the Inventory and Monitoring Advisory Council decided at their December 1-3, 2004, meeting that SOPN would still receive full funding in FY 2005. Based on being informed of that decision, SOPN then proceeded on several partnerships that included SOPN funds to match outside funding sources. On January 7, 2005, we were informed that we would not be receiving full funding, but instead would receive $225,700, a decrease of $163,300.

Table 1. List of abbreviations and affiliations for the 11 SOPN parks.

Park Name	State	Region	Abbreviation
Alibates Flint Quarries National Monument	Texas	Intermountain	ALFL
Bent's Old Fort National Historic Site	Colorado	Intermountain	BEOL
Capulin Volcano National Monument	New Mexico	Intermountain	CAVO
Chickasaw National Recreation Area	Oklahoma	Intermountain	CHIC
Fort Larned National Historic Site	Kansas	Midwest	FOLS
Fort Union National Monument	New Mexico	Intermountain	FOUN
Lake Meredith National Recreation Area	Texas	Intermountain	LAMR
Lyndon B. Johnson National Historical Park	Texas	Intermountain	LYJO
Pecos National Historical Park	New Mexico	Intermountain	PECO
Sand Creek Massacre National Historic Site	Colorado	Intermountain	SAND
Washita Battlefield National Historic Site	Oklahoma	Intermountain	WABA

Fiscal Year 2005

The Southern Plains Network achieved several major objectives in FY 2005. First, the Phase I Report was submitted completed with background information, list of potential vital signs, and conceptual models. NPSpecies certification for vertebrates was completed for the 10 original SOPN parks and plant certification was completed for 7 of the 10 original SOPN parks. Vegetation mapping projects began at nine network parks.

Six different biological inventory reports were completed involving five parks and four new inventories were initiated at three parks.

Fiscal Year 2006
In FY 2006, SOPN hope to receive full funding for vital signs as well as additional funding for vegetation mapping. SOPN will select the vital signs and complete the Phase II Report. SOPN hopes to initiate some aspects of protocol development after the vital signs are selected. SOPN will certify plants for the remaining three parks early in the FY and will certify new inventory reports as they are completed. Final reports are due for two inventories initiated in FY 2005. SOPN will continue to look for alternate funding sources to fill holes in our inventories and assist with protocol development.

SOPN Objectives for Biological Inventories:

1. Locate and catalog existing park natural resource documents, data sets, and spatial information and ensure that information is readily available.
2. Continue conducting inventories to reach the Servicewide goal of documentation for 90% of the vertebrate animal and vascular plant species within the network parks.
3. Continue to evaluate status and identify data gaps within the core set of natural resource inventories for network parks, and conduct investigations of these gaps and species of special concern to network parks.

SOPN Objectives for Vital Signs Monitoring:

1. Hire and retain professional staff and secure office space and facilities that provide a safe, healthy, and productive environment.
2. Develop and maintain working and decision-making processes that engages technical staff and managers of network parks.
3. Implement and maintain an integrated GIS and data management program.
4. Summarize and analyze existing information and concepts important for assessing current and future monitoring efforts and needs in the network parks.
5. Identify and prioritize all aquatic indicators (including climatic and atmospheric), including the water quality component of the monitoring plan, and develop protocols and implement programs to monitor the Vital Signs.
6. Identify and prioritize all terrestrial indicators (including climatic and atmospheric indicators), and develop protocols implement programs to monitor Vital Signs.
7. Develop and maintain strategies to share information with network parks, scientists, and others interested in the network's I&M program.

II. Accomplishments (Fiscal Year 2005) and Scheduled Activities (Fiscal Year 2006)

A. Biological Inventories – SOPN park inventories are listed in two different sections of this report. Inventories pertaining to the original 10 SOPN parks are outlined in Objective #2. SAND became a member of the network after SOPN was created, however SOPN has received no inventory funding for this park. Inventory activities for this park are listed under Task A3.3.

Objective 1 Locate and catalog existing park natural resource documents, data sets, and spatial information and ensure that information is readily available.

Task A1.1- NPSpecies Data Entry

- FY 2005 Accomplishments: Data entry from inventory reports was completed for vertebrates and vascular plants. Existing data in NPSpecies database was edited and cleaned. Data entry had not been completed until this year due to a decision by the SOPN board to focus limited inventory funding for the smaller SOPN parks on field inventories and not towards NPSpecies data entry. This decision was supported by WASO I+M.
- Scheduled FY 2006 Activities and Products: Complete data entry for new inventory projects (SAND Plants, SAND Birds, BEOL Wetlands, LYJO Plants, LYJO deep water fish).

Task A1.2 – NPSpecies Certification

- FY 2005 Accomplishments: As mentioned in above in the overview and objectives section, SOPN received considerable less funding for vital signs in Fiscal Year 2005 then it had planned. SOPN originally intended to certify all existing data in Fiscal; Year 2005 and this was stated in the draft FY 2005 workplan. When SOPN learned that it would not be receiving full funding, SOPN decided that it would only certify vertebrate data and would leave plant certification for FY 2006. This was clearly stated in the FY 2005 final workplan that was approved by WASO. On July 18, 2005, WASO informed SOPN that they would also like to see the plants certified in FY 2005, WASO also agreed to allocate an additional $5,000 to SOPN to help with the plant certification. SOPN has worked very hard to certify the plants since July 18. SOPN has certified vertebrate data for all of the original 10 parks. SOPN has also certified the plant data for 7 (ALFL, BEOL, CHIC, LAMR, LYJO, PECO, and WABA) of the original 10 parks. Arrangements to certify the plant data at CAVO and FOUN have been made, however the botanist has been in the field for the majority of the time since July 18. SOPN anticipates certification for these two parks will be complete in October. The 10th original park, FOLS, has the most complex data set as it is the result of several different inventories, none of which were led by SOPN. SOPN has contacted a botanist about assisting with this plant work and hopes to certify this data in early FY 2006. The eleventh park, SAND has very limited vertebrate and vascular plant data. SOPN plans to certify SAND data as ongoing inventories are completed.
- Scheduled FY 2006 Activities and Products: Finish data certification for plants at FOLS, FOUN, and CAVO. Certify data from new inventories as reports are completed.

Objective 2 Continue conducting inventories to reach the Servicewide goal of documentation for 90% of the vertebrate animal and vascular plant species within the network parks.

Task A2.1- Vascular Plant Inventory
Parks involved: WABA, LYJO, LAMR, and ALFL

- FY 2005 Accomplishments: Final reports were completed for ALFL, LAMR and WABA. NPSpecies data entry was completed for WABA, LAMR and ALFL. SOPN initiated and completed a supplemental plant inventory at LYJO with Botanical Research Institute of Texas (BRIT). The original plant inventory at this park was completed in 2002 at the end of a long drought. The principal investigator suggested that an additional inventory be conducted in a year with more typical rainfall. SOPN decided to fund the supplemental inventory with vital signs money in FY 2005 because: 1) the investigator already planned to be in the park collecting data for vegetation mapping; 2) the year had typical rainfall; 3) LYJO agreed to fund 50% of the work; and 4) the cost to SOPN was small ($1,551). This supplemental inventory documented 51 new species for the park.
- Scheduled FY 2006 Activities and Products: No projects planned.

Task A2.2- Mammal Inventory
Parks involved: CHIC, LYJO, LAMR, and ALFL

- FY 2005 Accomplishments: Final reports were completed for ALFL, CHIC, LAMR and LYJO. NPSpecies data entry was completed for CHIC, LYJO, LAMR and ALFL.
- Scheduled FY 2006 Activities and Products: No projects planned.

Task A2.3- Bird Inventory
Parks involved: CHIC, LAMR, ALFL, WABA.

- FY 2005 Accomplishments: Final reports were completed for ALFL, CHIC and LAMR. NPSpecies data entry was completed for CHIC, LAMR and ALFL.
- Scheduled FY 2006 Activities and Products: Obtain final report from cooperator at WABA. The WABA report is a park-funded project, but SOPN is assisting with the completion. The WABA project is now more than 18 months overdue.

Task A2.4- Herptile Inventory
Parks involved: CHIC, LYJO, LAMR and ALFL.

- FY 2005 Accomplishments: Final reports were completed for ALFL, CHIC, LAMR, and LYJO. NPSpecies data entry was completed for CHIC, LYJO, LAMR and ALFL.
- Scheduled FY 2006 Activities and Products: No projects planned.

Task A2.5- Fish Inventory
Parks involved: LYJO and LAMR.

- FY 2005 Accomplishments: Final reports were completed for LAMR and LYJO. LYJO arranged for a deep-water fish inventory that was completed the Lower Colorado River Authority at no cost to SOPN or LYJO. This deep-water area was

missed in original inventories due to funding constraints. NPSpecies data entry was completed for LYJO and LAMR.
- Scheduled FY 2006 Activities and Products: No projects planned.

Objective 3 Continue to evaluate status and identify data gaps within the core set of natural resource inventories for network parks, and conduct investigations of these gaps and species of special concern to network parks.

Task A3.1- Collate inventory information from SOPN parks
- FY 2005 Accomplishments: SOPN analyzed the inventories completed in FY 2005 for completeness. At the SOPN annual meeting, the prioritized inventory needs lists for the original 10 parks and for SAND was re-evaluated and revised.
- Scheduled FY 2006 Activities and Products: Re-evaluate SOPN inventory needs list based on data from completed inventories.

Task A3.2- Fill Inventory Gaps
- FY 2005 Accomplishments: Established a three-year Interagency Acquisition Agreement with Bureau of Reclamation for wetland inventory of plants and fish at BEOL. According to park staff this wetland has a high likelihood of being incorporated into the vital signs monitoring program, yet it did not receive enough attention during the initial inventory. Developed a proposal for bat inventories at NM and CO parks, however it was not submitted as SOPN lost the ability to match potential funds with the budget cuts.
- Scheduled FY 2006 Activities and Products: Complete wetland inventory. Pursue bat proposal. Keep aware of opportunities and continue to pursue way to complete holes in SOPN inventories through partnerships and funding possibilities.

Task A3.3- Search and plan for SAND inventory funding
- FY 2005 Accomplishments: This new park has essentially no natural resource information. SOPN decided to only pursue inventories at SAND that were deemed essential in developing a vital signs monitoring program and wait to complete non-essential inventories if and when SOPN is allocated additional inventory funding for this park. SOPN will try to minimize the use of vital signs money for SAND inventories by seeking alternate sources of funding. SOPN determined that the essential inventories were vascular plants, birds, and rare mammals. Field work for a bird inventory was completed by Rocky Mountain Bird Observatory. This project was funded with end-of-the year funds from FY 2004. SOPN submitted a successful proposal for $10,000 from Rocky Mountain Cooperative Ecosystems Studies Unit that was matched by $19,000 from SOPN to fund a 2-year vascular plant inventory at SAND with Colorado State University is the cooperator. SOPN also submitted a successful proposal for $36,400 from NRPP Small Parks for a rare species inventory at SAND to by completed in FY 2006-2007.
- Scheduled FY 2006 Activities and Products: Complete SAND vascular plant inventory report and data entry. Establish cooperative agreement and initiate field work for SAND rare species inventory. Continue consulting with Colorado Division

of Wildlife and other agencies and non-profits for partnership opportunities for vertebrate inventories.

Task A3.4 – Vegetation Mapping Inventories
Parks Involved: ALFL, BEOL, CAVO, CHIC, FOLS, FOUN, LAMR, LYJO, PECO, SAND and WABA

- FY 2005 Accomplishments: SOPN decided that vegetation maps were a high priority and that SOPN would allocate approximately $40,000 to the vegetation mapping program (VMP). However, SOPN decided it could no longer contribute this money once the budget cuts occurred. After SOPN informed the VMP of the budget situation, the VMP still decided to initiate several SOPN projects since SOPN staff were willing to oversee cooperative and interagency acquisition agreements and data entry, and individual parks were willing to assist the vegetation mapping program with logistical details and field work. SOPN obtained $292,208 from vegetation mapping projects. Cooperative agreements were established with: 1) BRIT for vegetation plot data collection at WABA, LYJO, and San Antonio Mission NHP (SAAN); 2) Natural Heritage New Mexico for vegetation plot data collection and development of vegetation classification at FOUN, CAVO, and PECO (classification at PECO will be funded in FY 2006); 3) Colorado Natural Heritage Program for vegetation plot data collection and development of vegetation classification at SAND and BEOL; 4) Kansas Natural Heritage Inventory vegetation plot data collection and development of vegetation classification at FOLS; and 5) NatureServe for training and vegetation classification for WABA, LYJO, and SAAN. Established interagency acquisition agreement with Bureau of Reclamation (BOR) for mapping at WABA, FOLS, LYJO, and SAAN, and for imagery acquisition at CHIC. The work with SAAN of the Gulf Coast I+M Network was overseen by SOPN at the request of the vegetation mapping program due to the close proximity of the two parks and the use of the same cooperator. Work continues at LAMR and ALFL, although SOPN staff are not integrally involved in this project. At the request of the Vegetation Mapping Program, SOPN also assisted BOR with funding quality assurance work at Knife River Indian Villages National Historic Site and Fort Union Trading Post National Historic Site of the Northern Great Plains I+M Network.
- Scheduled FY 2006 Activities and Products: Complete data entry, vegetation classification and preliminary mapping at LYJO, SAAN, WABA, FOLS, CAVO, FOUN, BEOL, and SAND. Continue (PECO) and initiate (CHIC) plot data collection. Initiate classification at PECO. Initiate ground truthing at FOLS, LYJO, SAAN, and WABA. All of these activities and products will be subject to the amount of funding allocated to SOPN from the vegetation mapping program.

B. Vital Signs Monitoring

Objective 1 Hire and retain professional staff and secure office space and facilities that provide a safe, healthy, and productive environment.

Task B1.1- Establish network positions and office(s)

- FY 2005 Accomplishments: Established a cooperative agreement to fund two Ph.D. students, one at University of Colorado and one at Texas A+M University. These students will assist with Vital Signs development as part-time network ecologists and eventually develop protocols as part of their dissertation. The University of Colorado plans to contribute approximately $34,000 (63% of project) of salary for the student and the advisor as part of the partnership. A partnership was established with the Gulf Coast CESU and Texas A+M University which provided two student interns who assisted with library research and the Phase I Report. A staffing plan was developed that will be used to guide network activities through the completion of the Phase III report in October, 2008.
- Scheduled FY 2006 Activities and Products: Continue agreement with Texas A+M for graduate students and interns. Re-evaluate agreement with University of Colorado, including using other universities.

Task B1.2- Ensure staff receive proper training and are updated with the most recent biological information.

- FY 2005 Accomplishments: Network coordinator attended national I+M meeting, Rocky Mountain Inventory and Monitoring Network Selection Meeting, CENTRUS NEON Planning Meeting, Intermountain Region Sampling Workshop, and Fundamentals V. Data manager attended national I+M meeting, a grant-writing workshop, and a week long training session with the data manager from the Northern Colorado Plateau I+M network.
- Scheduled FY 2006 Activities and Products: Attend relevant training and meeting opportunities. Network coordinator will attend Supervisor training and an IMR workshop on communicating the I+M program.

Objective 2 Develop and maintain working and decision-making processes that engages technical staff and managers of network parks.

Task B2.1- Coordinate network activities

- FY 2005 Accomplishments: Held two Technical Committee meetings and two Board of Directors meeting by phone. Held annual joint meeting of Technical Committee and Board of Directors in August at Pecos NHP. Elected Karren Brown (Superintendent, LAMR/ALFL) as a new Chair of the Board. Kept Technical Committee and Board up to date with numerous emails and phone calls. Webpage updated on a regular basis to reflect up-to-date information.
- Scheduled FY 2006 Activities and Products: Hold FY 2006 annual meeting likely in August, 2006. Elect a new chair of the board. Continue to hold necessary conference calls with technical committee and board for relevant SOPN decisions. Continually update webpage.

Objective 3 Implement and maintain an integrated GIS and data management program.

Task B3.1- Ensure efficient and central location for data entry and certification

- FY 2005 Accomplishments: A Procite database was completed with unique numbering system and keywords containing 485 documents. Data entry for NPSpecies complete. Reviewed project tracking databases and picked a database to use as a template for developing SOPN's project database. Natural resource resource and stressor database expanded to include justification statements, preliminary monitoring objectives, and preliminary rankings. This database was used at our conceptual model workshops to facilitate the review of issues and potential vital signs.
- Scheduled FY 2006 Activities and Products: Complete NPSpecies certification for new inventory projects. Develop plan for future NPSpecies data entry and revisiting certification. Modify resource and stressor database to be used to prioritize and select vital signs at workshops with park staff and outside experts. Develop project tracking database. Begin work on vital signs data management program. Develop photo database.

Task B3.2- Gather data, build, and update an integrated GIS program

- FY 2005 Accomplishments: Filled some data needs by acquiring and building elevation, temperature, and precipitation layers and maps. Created a list of existing and needed GIS layers. Created watershed and landscape maps for each individual network park.
- Scheduled FY 2006 Activities and Products: Begin filling a list of needs by developing, purchasing, or finding spatial data.

Objective 4 Summarize and analyze existing information and concepts important for assessing current and future monitoring efforts and needs in the network parks.

Task B4.1- Summarize and analyze existing information.

- FY 2005 Accomplishments: In-depth natural resource summaries were written for each park that were compiled from park and SOPN literature, peer-reviewed articles and personal knowledge of park staff. Developed and wrote Chapter 1 of Phase I report that included summaries on the ecosystems of the Southern Plains region, summaries of existing monitoring programs, lists of endemic, rare, listed, and exotic species, summary of water resources, and a summary of pertinent legislation and policy and GPRA goals.
- Scheduled FY 2006 Activities and Products: Incorporate comments on Chapter 1 of the Phase I report into the Phase II report. Begin to examine existing protocols and monitoring programs that are pertinent to the SOPN vital signs to be selected in FY 2006.

Objective 5 Identify and prioritize all aquatic indicators (including climatic and atmospheric indicators), including the water quality component of the monitoring plan, and develop protocols and implement programs to monitor the Vital Signs.

Task B5.1- Development and Identification of Vital Signs

- FY 2005 Accomplishments: Held ecosystem workshop with rivers and streams, reservoirs and landscape level issues breakout groups. The objective of the workshop was to: 1) evaluate draft conceptual models; 2) review the existing list of SOPN natural resource issues for completeness; and 3) develop potential vital signs for each natural resource issue. Each park was represented and 17 outside experts attended the workshop. Potential vital signs, justification statements, and preliminary monitoring objectives were added to each significant natural resource at the workshop.
- Scheduled FY 2006 Activities and Products: Hold a prioritization workshop where each vital sign is ranked according to pre-set criteria. This workshop will have park staff and outside experts and will have several different breakout groups. The product will be a prioritized list of vital signs. Then we will hold a selection workshop that will consist of only the SOPN technical committee. At this workshop we will fine-tune and tweak the prioritized list and select the actual vital signs that will make up the SOPN monitoring program. This list will then be presented to the Board for approval.

Task B5.2- Develop Conceptual Models

- FY 2005 Accomplishments: Established an agreement with Sue Braumiller, NPS Intermountain Regional Hydrologist, to develop river and reservoir aquatic models. Developed a palustrine freshwater marsh conceptual model. Models were given a thorough review at the workshop discussed in Task B5.1.
- Scheduled FY 2006 Activities and Products: Continue to refine conceptual models based on vital signs development and review of the Phase I report.

Task B5.3- Develop Water Quality Program

- FY 2005 Accomplishments: Compiled list of 303 (d) impaired waters. Developed a water resources report that summarizes SOPN water quality information, SOPN water bodies and existing water resource monitoring within, and in the vicinity of SOPN parks. This water resources report is presented in the Phase I Report.
- Scheduled FY 2006 Activities and Products: Select water quality parameters to monitor at prioritization and selection workshops presented in Task B5.1. Continue to hold informal meetings with park staff that are actively involved in maintaining resource water quality within network parks.

Task B5.4- Planning towards Completion of Monitoring Plan

- FY 2005 Accomplishments: A strategic plan for getting SOPN to Phase III was completed and presented to Board. The vital signs selection process was developed. Criteria for prioritization will likely be management significance, ecological significance, legal mandate, response variability, and feasibility of implementation. Phase I Report completed.
- Scheduled FY 2006 Activities and Products: Select vital signs and complete Phase II Vital Signs Monitoring Report. Begin work on protocol development after selection of vital signs is complete. This work could include reviewing monitoring protocols and programs that are relevant to SOPN selected vital signs, identifying cooperators to develop vital signs, and preparing for pilot field studies if necessary.

Objective 6 Identify and prioritize all terrestrial indicators (including climatic and atmospheric indicators), and develop protocols and implement programs to monitor Vital Signs.

Task B6.1- Development and Identification of Vital Signs

- FY 2005 Accomplishments: Held ecosystem workshop with short-and mixed-grass breakout groups. Held a second workshop (see Task B5.1 above) for landscape level issues and aquatic ecosystems. The objectives of these workshops were to: 1) evaluate draft conceptual models; 2) review the existing list of SOPN natural resource issues for completeness; and 3) develop potential vital signs for each natural resource issue. Each park was represented and 12 outside experts attended the grassland workshop. Potential vital signs, justification statements, and preliminary monitoring objectives were added to each significant natural resource at the workshops.
- Scheduled FY 2006 Activities and Products: Hold a prioritization workshop where each vital sign is ranked according to pre-set criteria. This workshop will have park staff and outside experts in several different breakout groups. The final product will be a prioritized list of vital signs. Actual vital sign selection will occur at a separate workshop that will consist of only the SOPN technical committee. During this workshop, SOPN will fine-tune and tweak the prioritized list and select the actual vital signs that will make up the SOPN monitoring program. This list will then be presented to the Board for approval.

Task B6.2- Develop Conceptual Models

- FY 2005 Accomplishments: Mixed and short-grass conceptual models were completed by Dan Tinker and Ann Hild at the University of Wyoming. Sub-models include grazing and fire, soil processes and prairie dogs. Pinion-juniper and landscape vulnerability conceptual models developed by SOPN staff.
- Scheduled FY 2006 Activities and Products: Continue to refine conceptual models based on vital signs development and review of the Phase I report.

Task B6.3- Planning for Completion of Monitoring Plan

- FY 2005 Accomplishments: A strategic plan for getting SOPN to Phase III was completed and presented to Board. The Vital signs selection process was developed. Criteria for prioritization will likely be management significance, ecological significance, legal mandate, response variability, and feasibility of implementation. Phase I Report completed.
- Scheduled FY 2006 Activities and Products: Select vital signs and complete Phase II Vital Signs Monitoring Report. Begin work on protocol development after selection of vital signs is complete. This work could include reviewing monitoring protocols and programs that are relevant to SOPN selected vital signs, identifying cooperators to develop vital signs, and preparing for pilot field studies if necessary.

Objective 7 Develop and maintain strategies to share information with network parks, scientists, and others interested in the network's I&M program.

Task B7.1- Develop and maintain relationships with parks, other I&M networks, and research entities.

- FY 2005 Accomplishments: Attended national meetings and network coordinator attended Intermountain Regional workshop. Assisted as host to the 2005 National I+M Meeting in Austin, TX. Gave a presentation and chaired a session at the National I+M meeting on "Where to draw the line" for network staff and natural resource projects. Assisted in making Kathy Jope's Grant Writing Workshop open to SOPN parks. Webpage continually updated with new reports and meeting notes. Submitted multi-park proposals for prairie restoration at 9 parks for $56,600 for Cooperative Conservation Initiative (CCI) and $648,200 for NRPP Natural Resource Management. The proposals were ranked 2nd (of 69) by CCI and 2nd (of 37) by NRPP and funding appeared likely. CCI was then cut by Congress and NPS decided to re-direct NRPP funds to the Natural Resource Challenge.
- Scheduled FY 2006 Activities and Products: Attend national and regional I+M meetings. Continue to promote SOPN and look for partnerships to increase our funding, effectiveness, and scientific understanding.

Task B7.2- Subject Expert Identification

- FY 2005 Accomplishments: Twenty-nine outside subject matter experts attended the two conceptual model workshops. Several others were contacted and expressed interest in assisting SOPN in the future but could not attend the workshops due to other commitments. Became a member of the Central US group of the National Ecological Observation Network.
- Scheduled FY 2006 Activities and Products: Invite subject matter experts to prioritization workshop. Identify potential experts to assist with vital signs protocol development. Continue identifying and communicating with subject matter experts in a wide variety of roles.

III. Staffing

Inventory and Monitoring Staff

Bruce Bingham, Intermountain Regional Coordinator	(303) 987-6706
Dusty Perkins, Ph.D., Southern Plains Network Coordinator	(830) 868-7128 x 281
Heidi Sosinski, Southern Plains Network Data Manager	(830) 868-7128 x 282
Karie Cherwin, University of Colorado Intern	(303) 898-5703
Tulia DeFex, Texas A+M University Intern	(979) 845-5702
Todd Swannack, Texas A+M University Intern	(979) 492-6153
Tomyeanne Zettner, Texas A+M University Intern	(512) 925-2406

Board of Directors

Mitzi Frank, 2005 Chair of Board, Oct. - May, (Supt., FOUN)	(505) 425-8025
Dennis Ditmanson, 2005 Chair of Board, June - Sept. (Supt., PECO)	(505) 757-6414
Karren Brown, 2006 Chair of Board, 2005 Member, (Supt. LAMR/ALFL)	(806) 857-3151
Steve Linderer, 2005 and 2006 Member, Sept. – Dec., (Supt., FOLS)	(620) 285-6911
Vacant, 2006 Member, (Supt., CAVO)	(505) 278-2201 x210
Alden Miller, 2005 and 2006 Member , (Chief of Resources and Facilities, WABA)	(580) 497-2742 x3
Kevin McMurry, 2005 Jan – Sept., and 2006 Member (Supt. FOLS)	(620) 285-6911
Bruce Bingham, 2004 and 2005, (IMR I&M Coordinator)	(303) 987-6706
Dusty Perkins, Ph.D., 2004 and 2005, (Network Coordinator)	(830) 868-7128 x281
Gary Willson, Ph.D., ad-hoc 2005 and 2006, (GP-CESU)	(402) 472-5047
Gillian Bowser, Ph.D., ad-hoc 2005 and 2006, (GC-CESU)	(979) 845-9787

Technical Committee

Alden Miller, 2005 and 2006 Chair, (Chief Resources + Facilities, WABA)	(580) 497-2742 x3
Paul Eubank, (Chief of Resource Management, LAMR/ALFL)	(806) 857-0309
Vacant, (Supervisory Park Ranger, FOUN)	(505) 425-8025 x28
Steve Burrough, (Chief Resource Management, CHIC)	(580) 622-3161 x601
Jason Lott, (Integrated Resources Program Manager, LYJO)	(830) 868-7128 x236
Fran Pannebaker, (Chief of Natural Resources, BEOL)	(719) 383-5010 x16
Brian Quigley, (Chief Park Ranger, CAVO)	(505) 278-2201 x230
Felix Revello, (Supervisory Park Ranger, FOLS)	(620) 285-6911
Alexa Roberts, Ph. D. (Superintendent, SAND)	(719) 438-5916
Ted Benson, (Park Ranger, PECO)	(505) 757-2611 x234
Dusty Perkins, (Network Coordinator)	(830) 868-7128 x281

Contractors/Cooperators

Dr. Jim Bergan, The Nature Conservancy – Inventories at LAMR, ALFL, LYJO
Dr. Gillian Bowser, Gulf Coast CESU – Texas A+M Undergraduate Interns

Sue Braumiller, NPS Intermountain and Midwest Hydrologist at CHIC – Aquatic Conceptual Models
Dr. Richard Broughton, Oklahoma Biological Survey – Vertebrate certification
Yvonne Chauvin, Natural Heritage New Mexico – Plant certification
Dan Cogan, Bureau of Reclamation – Vegetation Mapping
Jennifer Delisle, Kansas Natural Heritage Inventory – FOLS inventories, vertebrate Certification
Jim Drake, NatureServe – Vegetation Mapping
Dr. Bill Grant, Texas A+M University – Texas A+M Ph.D. Student
David Hanni, Rocky Mountain Bird Observatory – SAND bird inventory
Dr. Dexter Hess, retired Otero Junior College – Plant certification
Dr. Ann Hild, University of Wyoming – Grassland Conceptual Modeling
Dr. Bruce Hoagland, Oklahoma Biological Survey – WABA plant inventories, plant Certification
Dr. Kris Johnson, Natural Heritage New Mexico – Vertebrate certification
Dr. Jeff Kelly, Oklahoma Biological Survey – CHIC Inventories, vertebrate certification
Dr. Kelly Kindscher, Kansas Natural Heritage Inventory – Vegetation mapping
Melissa Landon, Colorado Natural Heritage Program –Vertebrate certification
Dr. Roel Lopez, Texas A+M University – Texas A+M Ph.D. student
Pat Mangan, Bureau of Reclamation – BEOL wetland inventory
Dr. Esteban Muldavin, Natural Heritage New Mexico – FOUN, CAVO, PECO vegetation mapping
Dr. Guy Nesom, Botanical Research Institute of Texas – LAMR/ALFL plant inventories, plant certification
Michael Patrikeev, Pterophylla Plants and Seeds – Vertebrate certification
Dr. Roy Roath, Colorado State University – SAND vegetation inventory
Dr. Joe Stevens, Natural Heritage New Mexico – Vegetation mapping
Dr. Dan Tinker, University of Wyoming – Grassland Conceptual Modeling
Rinda Tisdale-Hein, Bureau of Reclamation – BEOL wetland inventory
Dr. Roger Sanders, Botanical Research Institute of Texas – LYJO plant inventory and vegetation mapping, plant certification
Dr. Tim Seastedt, University of Colorado – Colorado Ph. D. Student
Bob Sivinski, New Mexico Forestry and Natural Resources – plant certification
Dr. Greg Smith, Emporia State University – WABA bird inventories, vertebrate certification

IV. Reports, Publications and Presentations

Braumiller, S. 2005. Conceptual Models for Aquatic and Riparian Ecosystems of the Southern Plains Network. National Park Service. 126 pp.

Cherwin, K. and D. W. Perkins. 2005. Southern Plains Network water resources report. University of Colorado, Boulder, CO. 39 pp.

Hoagland, B. W., A. Buthod, and W. Elisens. 2005. Vascular flora and historic vegetation of the Washita Battlefield National Historic Site, Roger Mills County, Oklahoma: Final Report. Oklahoma Biological Survey, University of Oklahoma, Norman, Oklahoma. 43 pp.

Kelly, J., J. Strong, J. Bahm, and A. L. Cooper. 2004. Mammal, Bird and Herpetological Inventory of Chickasaw National Recreation Area NPS. Oklahoma Biological Survey, University of Oklahoma, Norman, Oklahoma. 39 pp.

Nesom, G. L. and R. J. O'Kennon. 2005. Vascular plants of Lake Meredith National Recreation Area and Alibates Flint Quarries National Monument, Potter, Moore and Hutchinson Counties, Texas. Results of a 2002 floristic inventory and related research and reviews. The Nature Conservancy, San Antonio, Texas. 124 pp.

Patrikeev, M. and M. Gallyoun. 2004. Vertebrate animals of Lake Meredith National Recreation Area and Alibates Flint Quarries National Monument, Potter, Moore, and Hutchinson Counties, Texas. Results of a 2001-2003 zoological inventory and related research and reviews. The Nature Conservancy, San Antonio, Texas. 151 pp.

Patrikeev, M. and M. Gallyoun. 2004. Fishes, amphibians, reptiles, and mammals of Lyndon B. Johnson National Historical Park, Gillespie and Blanco Counties, Texas. Results of a 2001-2003 zoological inventory and related research and reviews. The Nature Conservancy, San Antonio, Texas. 63 pp.

Sanders, R. W. 2005. Update to: Vascular Plants of Lyndon B. Johnson National Historical Park Blanco and Gillespie Counties, Texas. Results of a 2005 Supplemental Floristic Inventory. Botanical Research Institute of Texas, Fort Worth, Texas. 37 pp.

Swannack, T. S. and D. W. Perkins. 2005. Landscape level issues facing the SOPN. Texas A+M University, College Station, Texas. 16 pp.

Tinker, D. and A. Hild. 2005. Shortgrass and Mixedgrass Ecosystems in the Southern Plains, U.S.A.: A Narrative Description of Conceptual Ecosystem Models. University of Wyoming, Laramie, Wyoming. 19 pp.

V. Status of Park Vital Signs Monitoring

Southern Plains Network 2005	Air Quality	Water Quality	Water Quantity	Geologic Resources	Plants	Animals	Landscape Characteristics
Planning and Design							
# parks monitoring w/ NRC funding	11	11	11	11	11	11	11
# parks monitoring w/ other funding	0	0	0	0	0	0	0
Protocols Implemented							
# parks monitoring w/ NRC funding	0	0	0	0	0	0	0
# parks monitoring w/ other funding	1	4	4	0	5	7	0
Analysis/Synthesis Available							
# parks monitoring w/ NRC funding	0	0	0	0	0	0	0
# parks monitoring w/ other funding	1	3	3	0	0	2	0

VI. USGS Protocol Development and Monitoring-Related Research Needs

- *Development of Vital Signs for restored grasslands* - Grassland systems and restoring degraded grasslands were identified during scoping sessions and subsequent ranking questionnaires sent to park staff as the most important natural resource issues for the Southern Plains Inventory and Monitoring Network (SOPN). Scoping sessions revealed that prairie restoration is either underway or is in the planning process at 9 of the 11 parks. The restoration and health of grasslands in the SOPN will play a major role in vital signs monitoring, however it is unclear what will make a good prairie restoration vital sign. Prairie restoration in tall-grass systems has advanced dramatically in recent decades. However there has been considerably less restoration effort in mixed- and particularly short-grass systems. Grassland birds are being used by the Prairie Cluster as a vital sign in tallgrass systems and as an ecological indicator by Rocky Mountain Bird Observatory in short-grass systems. However many of the parks in the SOPN are small and therefore may not have a complete grassland bird community with sufficient numbers for monitoring even when fully restored. For this reason a new vital sign that can be monitored on small short-grass prairie fragments must be developed. Ideally the vital signs for restored prairie would dovetail on vital signs used for intact grassland fragments.

VII. Budget Narrative

In FY 2005, SOPN received $225,700 in vital signs funding. SOPN also received an additional $5,000 for vascular plant NPSpecies certification and an additional $12,000 in end of the year inventory funds that were placed in the vital signs account for a total of $242,700. The network used this money to establish cooperative agreements with Texas A+M University and the University of Colorado for a Ph.D. student at each university, with Texas A+M for undergraduate and graduate student interns, and the Botanical Research Institute of Texas for a small supplemental plant inventory at LYJO (see task A.2.1 for justification of this inventory). SOPN also used vital signs funding as a match with $10,000 received from the Rocky Mountain CESU to fund a plant inventory at SAND with Colorado State University. The additional plant certification money funded an onsite certification visit for ALFL, LAMR, CHIC, and WABA, contracts with botanists for certification at BEOL, CAVO, FOUN, LYJO, and PECO, and data entry. The additional inventory dollars went towards work in FY 2006 with the plant inventory at SAND and a two-year wetland inventory at BEOL with Bureau of Reclamation. Travel funded by the vital signs account included a grassland conceptual model workshop, SOPN annual Board of Directors and Technical Committee meeting, the national I+M meeting, and IMR I+M workshop, grant writing workshop, data manager training with the Northern Colorado Plateau I+M Network, Rocky Mountain I+M Network Selection meeting, Central US NEON meeting, and the Gulf Coast CESU meeting. Vital signs funding also went towards personnel costs of network staff and administrative arrangements (3.5% of vital signs budget, 1.5% of total SOPN funding) with the host park, LYJO, office supplies, and miscellaneous expenses.

SOPN received $29,000 in water quality money in FY 2005. This funded an aquatic conceptual model workshop, an agreement with an IMR Hydrologist (S. Braumiller) to develop aquatic conceptual models, and an interagency acquisition agreement with the Bureau of Reclamation for a wetland inventory at BEOL.

SOPN received $292,208 from the vegetation mapping program. This funded cooperative agreements for aspects of plot data collection and classification at FOLS with Kansas Natural Heritage Inventory, at SAND and BEOL with Colorado Natural Heritage Program, at FOUN, CAVO, and PECO with Natural Heritage New Mexico, and at WABA, LYJO, and SAAN with Botanical Research Institute of Texas. Cooperative agreement with Nature Serve was established for training and classification at WABA, LYJO and SAAN. An interagency acquisition agreement was established with BOR for vegetation mapping and acquiring new aerial imagery for CHIC. The work at SAAN (of Gulf Coast I+M Network) was done at the request of the Vegetation Mapping Program since SAAN wanted to use the same botanist and classifier as was being used at WABA and LYJO. SOPN also assisted in moving vegetation quality assurance money for Knife River Indian Villages NHS and Fort Union Trading Post NHS of the Northern Great Plains I+M Network to BOR at the request of the vegetation mapping program.

The Intermountain Region assessed the vital signs ($800), water quality ($700), and vegetation mapping ($2,908) funding. There was a total of $100.19 in unexpended funds for SOPN org code 2122 in FY 2005.

In FY 2006 SOPN anticipates receiving its full funding amount of $389,700 for vital signs. This money will be used to continue funding two Ph.D. students, one at Texas A+M University and one at the University of Colorado, as well as interns at Texas A+M University. SOPN will fund a prioritization and selection meeting in this fiscal year. After this meeting SOPN plans to allocate money towards protocol development for vital signs. SOPN also is keeping approximately $30,000 undesignated. This money may be used to revise or add conceptual models, conduct a landscape level change analysis, or additional funds towards vital signs protocol development. In FY 2004, SOPN had planned to put $40,000 towards vegetation mapping inventories but was not able to do so when the budget was cut. SOPN plans to put this money towards vegetation mapping in FY 2006. Travel from the vital signs budget will include an IMR I+M communications workshop, the I+M annual meeting, and training for the data manager and network coordinator. Vital signs will fund the two permanent SOPN positions (network coordinator and data manager). Vital signs will also pay for administrative arrangements (2.8% of vital signs budget, 2.6% of total SOPN funding) with the host park, LYJO, office supplies, and miscellaneous expenses.

SOPN plans on receiving $29,000 in water quality money in FY 2006. This money will fund water quality protocol development and the SOPN annual Board of Directors and Technical Committee Meeting.

SOPN will also receive $20,000 in money from the IMR NRPP Small Park funding source for a rare vertebrate species inventory at SAND. This money will be allocated and the project initiated in FY 2006. SOPN hopes to receive additional money from the vegetation mapping program, but at this time does not know what that amount will be allocated.

VIII. Budget Summary - FY 05 Admin Report and FY 06 Work Plan

Budget Summary Fiscal Year 2005

FY05 Admin Report Network: 26 Southern Plains

Category: 1_Income

Description	*$ Amount*	*$$ Source*	*Where $ Went*	*Comments*
Vegetation Maps	$292,208.00	Veg. Mapping Program		
Rocky Mountain CESU	$10,000.00	Other Partners		
Vital Signs	$242,700.00	I&M - VS Monitoring		
Water Quality	$29,000.00	WRD - WQ Monitoring		
Subtotal	*$573,908.00*			

Category: 2_Personnel

Description	*$ Amount*	*$$ Source*	*Where $ Went*	*Comments*
Award for Supervisor of Network Coordinator	$922.76	I&M - VS Monitoring	NPS	
Data Manager	$57,897.19	I&M - VS Monitoring	NPS	
Network Coordinator	$81,854.95	I&M - VS Monitoring	NPS	
Administrative - LYJO	$8,510.82	I&M - VS Monitoring	NPS	
Subtotal	*$149,185.72*			

Category: 3_Coop. Agreements

Description	*$ Amount*	*$$ Source*	*Where $ Went*	*Comments*
Botanical research Institute of Texas - LYJO Supplemental Plant Inventory	$1,551.00	I&M - VS Monitoring	Other non-Federal	
Texas A+M University - Ph.D. Student	$11,750.00	I&M - VS Monitoring	University-CESU	
Texas A+M University - Interns	$5,429.00	I&M - VS Monitoring	University-CESU	
Botanical Research Institute of Texas - Vegetation Plots at LYJO, WABA, SAAN	$20,367.00	Veg. Mapping Program	Other non-Federal	
Colorado State University - Sand Creek Vegetation	$10,000.00	Other Partners	University-CESU	
Colorado State University - Sand Creek Vegetation Inventory	$13,735.00	I&M - VS Monitoring	University-CESU	
Bureau of Reclamation - BEOL Wetland Inventory	$10,000.00	WRD - WQ Monitoring	Other Federal	
University of Colorado - Research Associate/Ph.D. Student	$19,826.00	I&M - VS Monitoring	University-CESU	
Colorado State University - Additional Sand Creek Vegetation Inventory	$5,875.00	I&M - VS Monitoring	University-CESU	

Kansas Natural Heritage Inventory - Vegetation plots and classfication FOLS	$22,670.00	Veg. Mapping Program	Univ_Non-CESU
NPS, Intermountain Region - Aquatic Conceptual Models	$13,207.18	WRD - WQ Monitoring	NPS
Natural Heritage New Mexico - Vegetation pots and classification PECO, FOUN, CAVO	$58,016.00	Veg. Mapping Program	University-CESU
Nature Serve Classification LYJO, SAAN, WABA	$28,123.00	Veg. Mapping Program	Other non-Federal
Bureau of Reclamation - Vegetation Mapping, LYJO, SAAN, WABA	$38,600.00	Veg. Mapping Program	Other Federal
Bureau of Reclamation - CHIC Imagery	$29,000.00	Veg. Mapping Program	Other Federal
Bureau of Reclamation - BEOL Wetland Inventory	$4,956.00	I&M - VS Monitoring	Other Federal
Colorado Natural Heritage Program - Vegetation plots and classification BEOL, SAND	$86,448.00	Veg. Mapping Program	University-CESU
Subtotal	*$379,553.18*		

Category: 4_Contracts

Description	$ Amount	$$ Source	Where $ Went	Comments
Park Housing for Colorado Ph.D.	$785.40	I&M - VS Monitoring	NPS	
Rental Charge for Room for Workshop - Highlands University	$400.00	I&M - VS Monitoring	Other non-Federal	
Vertebrate Certification - Natural Heritage New Mexico and Michael Patrikeev	$700.00	I&M - VS Monitoring	Other non-Federal	
Plant Certification - Oklahoma Biological Survey, Botanical Reseach Institute of Texas, Natural Heritage	$3,177.74	I&M - VS Monitoring	Other non-Federal	
Subtotal	*$5,063.14*			

Category: 5_Operations/Equipme

Description	$ Amount	$$ Source	Where $ Went	Comments
Misc (Ingenta, computer cables, battery backup, toner)	$1,787.36	I&M - VS Monitoring	Other non-Federal	
2 external hard drives - backup	$396.00	I&M - VS Monitoring	Other non-Federal	
Computer	$2,192.57	I&M - VS Monitoring	Other non-Federal	
New desk and new phone/computer lines for interns	$748.90	I&M - VS Monitoring	Other non-Federal	
Office supplies (toner, Adobe illustrator+acrobat)	$954.76	I&M - VS Monitoring	Other non-Federal	
Gas for Vehicle	$116.07	I&M - VS Monitoring	NPS	
Subtotal	*$6,195.66*			

Category: 6_Travel

Description	$ Amount	$$ Source	Where $ Went	Comments
IMR Sampling Workshop	$660.02	I&M - VS Monitoring	Other non-Federal	
Grant Writing Workshop	$881.69	I&M - VS Monitoring	Other non-Federal	
Plant Certification Trip	$203.19	I&M - VS Monitoring	Other non-Federal	
Grassland Conceptual Model Workshop	$4,160.13	I&M - VS Monitoring	Other non-Federal	
Aquatic Conceptual Model Workshop	$7,854.11	WRD - WQ Monitoring	Other non-Federal	
Annual Meeting - Joint Technical Committee and Board	$5,162.24	I&M - VS Monitoring	Other non-Federal	
N. Colorado Plateau Data Manager Mentoring	$970.05	I&M - VS Monitoring	Other non-Federal	
Gulf Coast CESU Meeting	$77.25	I&M - VS Monitoring	Other non-Federal	
Rocky Mountain Network Selection Meeting	$633.49	I&M - VS Monitoring	Other non-Federal	
Neon Meeting	$98.34	I&M - VS Monitoring	Other non-Federal	
National I+M Meeting	$1,187.24	I&M - VS Monitoring	Other non-Federal	
Vegetation Mapping	$1,014.36	I&M - VS Monitoring	Other non-Federal	
Subtotal	*$22,902.11*			

Category: 7_Other

Description	$ Amount	$$ Source	Where $ Went	Comments
Unexpended Funds	$100.19	I&M - VS Monitoring	NPS	
IMR Assessment for Vegetation Mapping Money	$2,908.00	Veg. Mapping Program	NPS	
IMR Assessment for Vital Signs Money	$800.00	I&M - VS Monitoring	NPS	
Knife River and Fort Union Trading Post	$6,500.00	Veg. Mapping Program	Other Federal	
IMR Assessment for Water Quality Money	$700.00	WRD - WQ Monitoring	NPS	
Subtotal	*$11,008.19*			

Budget Analysis

Analysis of Expenses by Where $ Went

Funding Source	Total $$	NPS	USGS	Other Federal	Univ.-CESU	Univ_Non-CESU	Other non-Federal
I&M - VS Monitoring	$239,515	$150,987		$4,956	$56,615		$26,956
Other Partners	$10,000				$10,000		
Veg. Mapping Program	$292,632	$2,908		$74,100	$144,464	$22,670	$48,490
WRD - WQ Monitoring	$31,761	$13,907		$10,000			$7,854
Totals	$573,908	$167,803		$89,056	$211,079	$22,670	$83,300

Analysis of Expenses by Category

Funding Source	Total $$	Personnel	Coop Agree.	Contracts	Operations/Equip	Travel	Other
I&M - VS Monitoring	$239,515	$149,186	$63,122	$5,063	$6,196	$15,048	$900
Other Partners	$10,000		$10,000				
Veg. Mapping Program	$292,632		$283,224				$9,408
WRD - WQ Monitoring	$31,761		$23,207			$7,854	$700
Totals	$573,908	$149,186	$379,553	$5,063	$6,196	$22,902	$11,008

Expense Totals By Category

Category	SubTotal	Percent
2_Personnel	$149,186	25.99%
3_Coop. Agreements	$379,553	66.13%
4_Contracts	$5,063	0.88%
5_Operations/Equipment	$6,196	1.08%
6_Travel	$22,902	3.99%
7_Other	$11,008	1.92%
	$573,908	

Budget Summary – Fiscal Year 2006

FY06 Work Plan Network: 26 Southern Plains

Category: 1_Income

Description	*$ Amount*	*$$ Source*	*Where $ Went*	*Comments*
Vital Signs	$389,700.00	I&M - VS Monitoring		
Water Quality	$29,000.00	WRD - WQ Monitoring		
NRPP - Small Park	$20,000.00	Park or Regional $$		
To Be Determined	$0.00	Veg. Mapping Program		
Subtotal	*$438,700.00*			

Category: 2_Personnel

Description	*$ Amount*	*$$ Source*	*Where $ Went*	*Comments*
Network Coordinator	$84,000.00	I&M - VS Monitoring	NPS	
Data Manager	$61,000.00	I&M - VS Monitoring	NPS	
Administrative - LYJO	$11,000.00	I&M - VS Monitoring	NPS	
Subtotal	*$156,000.00*			

Category: 3_Coop. Agreements

Description	*$ Amount*	*$$ Source*	*Where $ Went*	*Comments*
Texas A+M Interns	$10,000.00	I&M - VS Monitoring	University-CESU	
University of Colorado Ph.D.	$19,826.00	I&M - VS Monitoring	University-CESU	
Texas A+M Ph.D.	$38,775.00	I&M - VS Monitoring	University-CESU	
SAND Rare Species	$20,000.00	Park or Regional $$	University-CESU	
Vegetation Mapping	$40,000.00	I&M - VS Monitoring	University-CESU	
Water Quality Protocol Development	$21,000.00	WRD - WQ Monitoring	University-CESU	
Vital Signs Protocol Development	$45,000.00	I&M - VS Monitoring	University-CESU	
To be determined, land change analysis, additional conceptual models, critical inventories	$30,000.00	I&M - VS Monitoring	University-CESU	
Subtotal	*$224,601.00*			

Category: 4_Contracts

Description	*$ Amount*	*$$ Source*	*Where $ Went*	*Comments*
Printing of SOPN Information	$1,000.00	I&M - VS Monitoring	NPS	
Subtotal	*$1,000.00*			

Category: 5_Operations/Equipme

Description	$ Amount	$$ Source	Where $ Went	Comments
Uniform Allowance	$1,000.00	I&M - VS Monitoring	Other non-Federal	
Office Supplies	$2,699.00	I&M - VS Monitoring	Other non-Federal	
Miscellaneous	$1,400.00	I&M - VS Monitoring	Other non-Federal	
Vehicle	$1,000.00	I&M - VS Monitoring	Other non-Federal	
Subtotal	*$6,099.00*			

Category: 6_Travel

Description	$ Amount	$$ Source	Where $ Went	Comments
Selection Workshop	$10,000.00	I&M - VS Monitoring	Other non-Federal	
I+M Annual Meeting	$2,000.00	I&M - VS Monitoring		
SOPN Annual Meeting	$9,000.00	WRD - WQ Monitoring	Other non-Federal	
Network Coordinator Training	$2,000.00	I&M - VS Monitoring	Other non-Federal	
Data Manager Training	$2,000.00	I&M - VS Monitoring	Other non-Federal	
IMR I+M Meeting	$1,000.00	I&M - VS Monitoring	Other non-Federal	
Prioritization Workshop	$25,000.00	I&M - VS Monitoring	Other non-Federal	
Subtotal	*$51,000.00*			

Budget Analysis

Analysis of Expenses by Where $ Went

Funding Source	Total $$	NPS	USGS	Other Federal	Univ.-CESU	Univ_Non-CESU	Other non-Federal
I&M - VS Monitoring	$388,700	$157,000			$183,601		$46,099
Park or Regional $$	$20,000				$20,000		
WRD - WQ Monitoring	$30,000				$21,000		$9,000
Totals	$438,700	$157,000			$224,601		$55,099

Analysis of Expenses by Category

Funding Source	Total $$	Personnel	Coop Agree.	Contracts	Operations/Equip	Travel	Other
I&M - VS Monitoring	$388,700	$156,000	$183,601	$1,000	$6,099	$42,000	
Park or Regional $$	$20,000		$20,000				
WRD - WQ Monitoring	$30,000		$21,000			$9,000	
Totals	$438,700	$156,000	$224,601	$1,000	$6,099	$51,000	

Expense Totals By Category

Category	SubTotal	Percent
2_Personnel	$156,000	35.56%
3_Coop. Agreements	$224,601	51.20%
4_Contracts	$1,000	0.23%
5_Operations/Equipment	$6,099	1.39%
6_Travel	$51,000	11.63%
	$438,700	